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REMARKS

The final Office Action dated May 12, 2004, was carefully reviewed.

The Examiner rejected claims 1-13 under 35 U.S.C. § 103(a) as being

anticipated by U.S. Patent No. 6,138,185 to Nelson et al., hereinafter Nelson in

view of U.S. Patent No. 5,734,920 to Gotoh et al., hereinafter Gotoh.

In prior responses, claims 1-4 of the present invention has been

distinguished from Nelson in that Nelson does not disclose using a clock

signal to synchronize the operation of the serial I/O shifter as claimed in the

present invention.

The Examiner asserted that Nelson discloses all of the limitations of

claim 1 except synchronizing the serial I/O shifter using the clock signal. The

Examiner asserted that Gotoh discloses serial communication which supplies

the serial signals by conversion to microcomputer, the signals generated in

synchronization with the rotation of the engine, wherein serial

communications data has a send/receive serial communications data buffer

including serial shift registers at col. 12, lines 56-67. The Examiner asserted

that it would have been obvious to combine Nelson with Gotoh to achieve the

present invention.

The present invention requires a clock signal for clocking a transfer of

serial data from the controller to the external device. The clock signal is for

synchronizing the operation of the serial I/O shifter. The present invention

teaches reconstructing serialized data for communication with a parallel

device. Parallel reconstruction begins on the assertion of a latch signal to the

external device.   Thereafter, serial I/O data from the external device is clocked into the serial I/O shifter.   Once all "n" bits of the serial I/O data stream have been clocked into the shifter, the shifter reconstructs the serial data into parallel I/O signals. The parallel I/O signals are then output to the I/O crossover-switching network.

The Gotoh reference is directed to an electronic control unit which is used in vehicle engine control. The Gotoh reference proposes several general processing and control systems that provide efficient computer control of electrical actuators in a vehicle based on multidimensional information. In one embodiment, Gotoh discloses input processing of signals by inputting the electrical signals from various engine sensors, a parallel communications means, a conversion means for converting the parallel signals to serial signals, and a serial communications means to supply the serial signals to the microcomputer. According to the Gotoh reference, in one embodiment, the signals supplied to the microcomputer are signals generated in synchronization with the rotation of the engine. (col. 4, lines 29-45). This is not the same as using a clock signal to synchronize the operation of a serial I/O shifter as claimed in the present invention.

Gotoh teaches that for serial data communications, when instruction data or output data is received from the SIO, input/output processing IC input data is sent. Data received from the CPU is processed in accordance with commands, and if it is output data, it is converted to parallel data in the output buffer and then output. Gotoh does not teach or disclose a clock signal

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for synchronizing the transfer of serial data from the controller to the external device where the clock signal synchronizes the operation of the I/O shifter as taught by the present invention.

It is respectfully asserted that combining Nelson and Gotoh would not result in the Applicant's invention. Nelson teaches processing connection and clear requests concurrently to avoid blocking signals at busy ports. The clock signal is Nelson is used to encode requests and is not used to synchronize the I/O shifter as claimed in the present invention. Gotoh discloses a parallel communication circuit that converts parallel signals output from the CPU into serial signals. Because Nelson does not teach synchronization of the clock signal and the I/O shifter, the combination of Nelson and Obata would not result in a synchronous transfer of serial data and reconstruction of parallel I/O signals from an incoming serial data stream as taught by the Applicant of the present invention.

Regarding claim 5, and the claims that depend therefrom, the Examiner asserted that Nelson discloses serially transferring bits of the data stream from an I/O multiplexer to an external device at the rate of one bit per cycle of a clock signal at column 4, lines 3-61 and again at column 9, lines 7-10. It is respectfully asserted that Nelson does not teach or disclose transferring bits of the data stream at the rate of one bit per cycle of a clock signal.

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The Nelson reference discloses a clock signal coupled to each PRC and each port. However, the clock signal in Nelson does not synchronize the I/O shifters and does not teach a mandatory timing relationship between the connection and the response buses as taught by the applicant of the present invention. In Nelson, the serial request and response buses operate independently in a non-blocking fashion to process connection and clear requests in parallel. Column 4, lines 5-17, emphasize that each serial request bus and each serial reply bus are independent, requests and responses can be processed concurrently to reduce latency. Further, Nelson defines "concurrently" as meaning "processed during a single clock cycle." The clock signal in Nelson is not used to serialize parallel data and does not serially transfer bits of the data stream at the rate of one bit per cycle as taught by the Applicant of the present invention.

Claims 10-13 have been canceled herein and therefore, the rejection is not addressed herein.
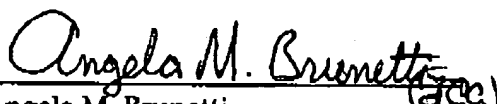
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It is respectfully requested the Examiner withdraw the rejection of

claims 1-9 under 35 U.S.C. § 103. Should the Examiner have any questions or

comments that may place the application in better condition for allowance, he

is respectfully requested to call the undersigned attorney.

Respectfully submitted,

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